Obsolete

DB 655A
DB 877
DEKABOX® decade resistors

Instruction Sheet

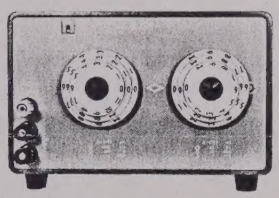
Electronic Services - Los Angele
M122249X

Electro Scientific Industries, Inc.
00 N.W. SCIENCE PARK DRIVE / PORTLAND, OREGON 97229 / U.S.A.

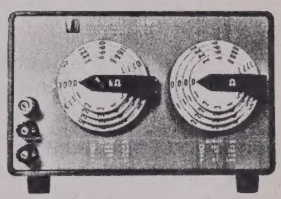
DECEMBER 1970
REPLACES APRIL 1967

description

ESI Models DB 655A and DB 877 DEKABOX® decade resistors are double coaxial-dial precision resistance elements. Model DB 655A has six decades and Model DB 877 has eight. They are similar electrically and identical in other specifications.



MODEL DB 655A



MODEL DB 877

specifications

Accuracy: Accuracy of resistance increments is given in the accompanying table.
Accuracy of resistance change from zero setting is given below.
Initial: ±(0.01% + 7 mΩ).
Long-Term: ±(0.02% + 10 mΩ).

Short-Term Switching Repeatability: 1 mΩ (typical).

Number of Decades: Six for DB 655A; eight for DB 877.

Total Resistance: 120 kΩ, 1.2 MΩ, and 12 MΩ for DB 655A; 12 MΩ for DB 877.

Resistance Per Decade: See table.

Smallest Step: See table.

Resistance at Zero Setting: Approximately 30 mΩ for DB 655A; approximately 40 mΩ for DB 877.

Breakdown Voltage: 1000 V peak to case.

Dimensions: Width 8.5 in. (21.6 cm), height 5.3 in. (13.5 cm), depth 7 in. (17.8 cm).

Weight: 5.5 lb (2.5 kg).

RATINGS PER STEP FOR EACH DECADE
Models DB 655A and DB 877

RESISTANCE PER DECADE (Ω)	SMALLEST STEP (Ω)	INCREMENTAL ACCURACY		COEFFICIENTS		MEASUREMENT DUTY MAXIMUM RATINGS		PEAK VOLTAGE (V/step)
		INITIAL (%)	LONG-TERM (%)	TEMPERATURE (ppm/°C)	POWER (ppm/mW/step)	POWER (mW/step)	CURRENT (mA)	
10 M	1 M	0.02	0.03	5	0.3	22	0.15	150
1 M	100 k	0.02	0.03	5	0.3	220	1.5	150
100 k	10 k	0.02	0.03	5	0.3	500	7	1000
10 k	1 k	0.02	0.03	5	0.3	500	23	1000
1 k	100	0.03	0.03	5	0.3	500	71	1000
100	10	0.03	0.03	15	0.9	500	230	1000
10	1	0.1	0.12	20	1.2			
1	0.1	1.0	1.0	60	6			
0.1	0.01	10	10	400	60			

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warranties

WARRANTY OF QUALITY

Electro Scientific Industries, Inc. warrants its products to be free from defects in material and workmanship for the following periods:

1. Two years for components and instruments using passive circuitry. One year for repairs of out-of-warranty items.
2. One year for components and instruments using active circuitry (see ESI Metrology Catalog). Six months for repairs of out-of-warranty items.

During the in-warranty periods, we will service or, at our option, replace any device that fails in normal use to meet its published specifications. Batteries, tubes and relays that have given normal service are excepted.

WARRANTY OF TRACEABIL

Electro Scientific Industries, Inc. maintains reference standards of measurement which are compared with the U. S. National Standards through frequent tests by the U. S. National Bureau of Standards.

ESI working standards and testing apparatus used are calibrated against the ESI reference standards in a rigorously maintained program of measurement control.

The manufacture and final calibration of all ESI instruments are controlled by use of the ESI reference and working standards and testing apparatus in accordance with established procedures and documented results. (Reference MIL-C-45662)

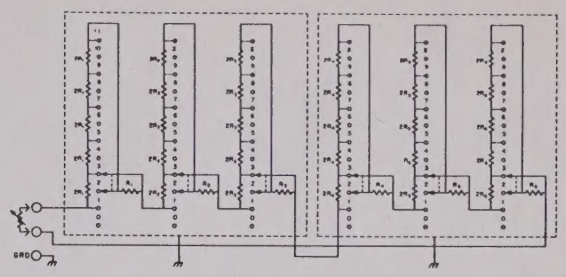
Final calibration of this instrument was performed with reference to the mean values of the ESI reference standards or to ratio devices that were verified at the time and place of use.

operation

Three binding posts are provided on the front panel of the DEKABOX. The GRD binding post is connected to the metal case which forms a shield for the instrument. The resistance between the other two binding posts corresponds to the setting of the coaxial dials, which are arranged to read resistance directly in ohms.

All dials can be turned through a complete circle, which allows settings to be changed rapidly and directly from X to 0. All dials except the first have an X position which corresponds to ten steps on the dial or one step of the next higher dial. The first dial has 12 positions, 0 through 11, which allow a total resistance of more than 12 times the step resistance of the first dial.

MODEL DB 655A SCHEMATIC DIAGRAM



calibration

To calibrate the instrument, measure each resistor with a resistance bridge of 0.01% accuracy or better. ESI Models 231, 232 and 242 Resistance Measuring Systems are recommended for this use. The procedure is as follows:

1. Set all dials to 0, measure and record zero resistance.
2. Set each dial to 1, 2, 4, 6, 8, and X in turn and measure the resistance at each setting with all other dials set to 0.
3. Subtract the zero resistance from each measured resistance less than 1 kilohm.

maintenance

Periodic maintenance of DEKABOXES is neither required nor recommended. The switches are lubricated at the time of manufacture and should be cleaned or lubricated *only* if they are not making good electrical contact. In such a case, proceed as follows:

1. Place instrument horizontally on bench, with a sheet of white paper under switch to be cleaned. Spray switch with Freon TF degreaser in aerosol can (Miller Stephenson Co. or equivalent) until no more residue appears on white paper. Drying is not necessary.
2. Lubricate with a low-conductivity oil (Viscosity Oil Co., No. 7069, available from ESI as Part No. 13500). Apply one drop to each rotor tab and one drop to the rotor ring contact using a hypodermic needle. With a small brush, apply a dab of petroleum jelly to each switch bearing and detent mechanism. DO NOT OVERLUBRICATE.

replacement parts

The following table lists replacement parts alphabetically by name of part. All parts listed are available from Electro Scientific Industries and must be ordered from the factory. When ordering include the following information:

Model and serial number of the instrument
ESI part number and description of part

Federal Supply Code for Manufacturers (FSCM) for Electro Scientific Industries, Inc. is 11837.

DESCRIPTION	ESI PART NO.	QTY USED MODEL DB 655A	MODEL DB 877
Cap, Binding Post, Gray	1476	2	2
Cap, Binding Post, Gold Plated	1172	1	1
Resistor Switch Assembly, 0.1Ω/step -including-	4937	1(a)	1
Resistor, 0.0992Ω	4939	1(a)	1
Resistor, 0.1992Ω	4938	5(a)	5
Switch Section	73041	1(a)	1
Resistor Switch Assembly, 1Ω/step -including-	4899	1(b)	1
Resistor, 0.9992Ω	4901	1(b)	1
Resistor, 1.9992Ω	4900	5(b)	5
Switch Section	73041	1(b)	1
Resistor Switch Assembly, 10Ω/step -including-	4893	1	1
Resistor, 9.9992Ω	4895	1	1
Resistor, 19.9992Ω	4894	5	5
Switch Section	73041	1	1
Resistor Switch Assembly, 100Ω/step -including-	4888	1	1
Resistor, 100Ω	4890	1	1
Resistor, 200Ω	4889	5	5
Switch Section	73041	1	1
Resistor Switch Assembly, 1kΩ/step -including-	4882	1	1
Resistor, 1kΩ	4884	1	1
Resistor, 2kΩ	4883	5	5
Switch Section	73041	1	1
Resistor Switch Assembly, 10kΩ/step -including-	4902	1	1
Resistor, 10kΩ	4904	1	1
Resistor, 20kΩ	4903	5	5
Switch Section	73041	1	1
Resistor Switch Assembly, 100kΩ/step -including-	4905	1	1
Resistor, 100kΩ, Bobbin	4907	1(c)	1
Resistor, 200kΩ, Bobbin	4906	5(c)	5
Switch Section	73041	1(c)	1
Resistor Switch Assembly, 1MΩ/step -including-	4958	1(d)	1
Resistor, 1MΩ, Bobbin	5393	1(d)	1
Resistor, 2MΩ, Bobbin	5394	5(d)	5
Switch Section	73041	1(d)	1

(a) 120kΩ model only
(b) 120kΩ and 1.2MΩ models only
(c) 1.2MΩ and 12MΩ models only
(d) 12MΩ model only

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